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ORIGINAL ARTICLES.

VISUAL TESTS FOR CHILDREN.

By ARTHUR E. EWING, M.D.,

ST. LOUIS, MO.

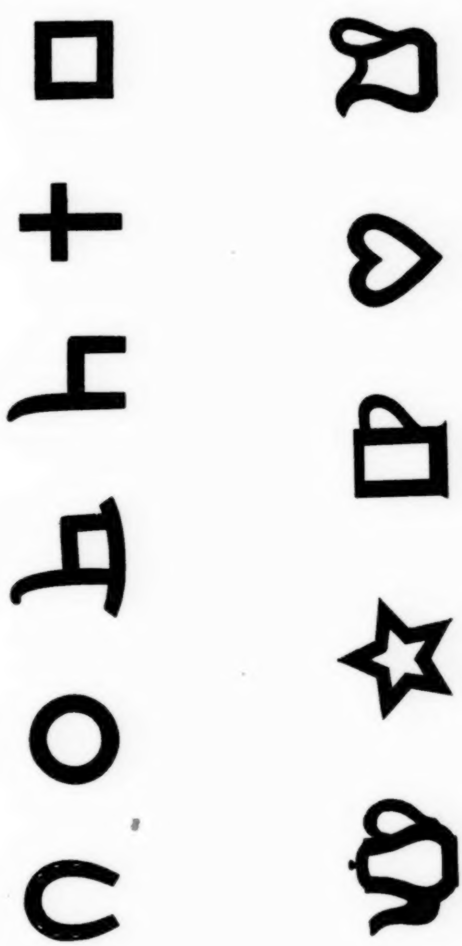
SINCE 1864, when Donders announced his epoch-making discovery of the leading part which hypermetropia plays in the etiology of convergent strabismus, the indication for the correction of the refraction in this affection has been generally conceded, and convex glasses have been prescribed, with more or less of method, either at the beginning, or at some subsequent stage of treatment. The effectiveness of neutralizing convex spectacles given in the incipiency of the affection, in controlling a newly-discovered crossing of the eyes, is becoming more and more widely recognized, and, with the improvement in optometric methods, the conviction that it is practicable to make and maintain a satisfactory correction of the refraction in young children is steadily gaining ground.

Examination by means of the ophthalmoscope by the direct method (erect image), generally under full artificial mydriasis, is ordinarily sufficient for the detection of ametropia, and often also for an approximately correct measurement of its grade. The shadow test affords still better measurements,

and, when supplemented by measurements of the cornea by means of the Javal-Schiötz ophthalmometer, may yield results of sufficient accuracy to admit of their provisional adoption in the prescription of glasses. But however valuable may be the measurements obtained by these objective methods, the all-important questions of the acceptance of the glasses in distant vision, and of the visual acuteness both with and without glasses, remain to be answered. To this end we employ direct visual tests, by means of Snellen's test-letters, and of cards printed with radiating lines, etc., whenever the age and the general intelligence of the patient are such as to admit of their use.

In the case of many illiterates, and especially of young children, subjective tests based on the recognition and naming of letters are inapplicable, and it was to meet this difficulty that in 1885, while serving as assistant to Dr. John Green, I designed a number of special characters, representing objects familiar in every-day life and therefore easily recognized and named. These characters were engraved and printed, in 1886, in conjunction with new combinations of test-letters previously devised and published by Dr. Green. Of this still unpublished collection examples have been given, from time to time, to different colleagues, and have a'so been in daily use for the past sixteen years in my own work and in that of Drs. Green and M. H. Post, and of others who have been associated with us.

Of the nine characters originally drawn and engraved, six are here shown in the upper row of the accompanying plate. The forms include a horseshoe, a circle, a rocking chair, a chair, a cross and a square. A star, a crescent and a milk-jug or pitcher were included in the same series, but of these the crescent has since been rejected, the star and the pitcher have been drawn anew, and a teapot, a mug, and a heart have been added, as shown in the lower row. The two chairs, the pitcher, the teapot, and the mug are drawn in profile, so that the chairs show but two legs, the tea-pot shows the handle and the spout, and the mug and pitcher their handles. All are drawn approximately to Snellen's scale of 1′ visual angle for the thickness of the line and 5′ for the size of the object, but with variations necessitated by the forms of certain ob-



jects, as the two chairs, the cross and the teapot. The differences in the ease of recognition of the several characters are found to be not much if at all greater than in the case of the standard test-letters of Snellen.

An intelligent child will often name these characters, or at least a sufficient number of them, correctly at first sight, perhaps calling the square a "box," or a "window," or a "picture frame"; the circle a "hoop" or a "ring," etc. In most cases, however, some study of the characters is found to be necessary, and for this purpose we have had them printed singly on small cards, and have given them to the child to look at, and to learn to name them, at home.

The gradations in size and the numbering of the several sizes of the characters are the same as in Dr. Green's "Test-Letters in Geometrical Progression," communicated to the American Ophthalmological Society in 1867 and reported in the Transactions for 1867-68. The ratio, as compared with the next larger size, is $\sqrt{0.5}$ (=1 : 0.707, or practically 1 : 0.7), or, as compared with the next smaller size, $\sqrt{2}$ (=1 : 1.414, or practically 1 : 1.4), which gives the convenient series: — 5, 7, 10, 14, 20, 28, 40, 56, etc., the successive numerals representing the distances at which the several sizes of characters should be discerned by a person of normal vision.* I have arranged the characters in two different ways, namely, in lines each containing a single letter of each size, as proposed by Dr. Green (Transactions International Ophthalmological Congress, London, 1872), and also (following Snellen) in lines of a single size. Each character in each size is engraved on a separate block of wood or of type metal (Green, 1872), thus admitting of setting them up like ordinary printer's types in any desired sequence, and so varying the arrangement, *ad libitum*, on different cards.

*This series in geometrical progression, as proposed by Dr. Green in 1867, is now strongly insisted upon by Javal as the one scientific ratio which should be adopted in all arrangements of test-letters (XIIIe Congrès International de Médecine, Paris, 1900.—Rapports de la Section d'Ophtalmologie).

THE TECHNIQUE OF MUSCLE ADVANCEMENT.

BY DR. EDMUND LANDOLT,

PARIS.

Translation made for the AMERICAN JOURNAL OF OPHTHALMOLOGY *by Dr. Chas. H. Beard, Chicago.*

IN 1889 I communicated to the International Congress of the Medical Sciences at London the results of my researches as to the fields of excursion of the eyes. These show that, in concomitant strabismus, there exists in both eyes a symmetric limitation—temporal in the convergent form, and nasal in the divergent.

Hereby the assertion of the text-books, that concomitant strabismus may be distinguished from paralytic strabismus by the integrity of the ocular excursions, is contradicted; on the other hand, they accord excellently with the theory of Donders that concomitant strabismus is a binocular affection, even though the deviation is never manifest save in one eye at a time.

My experiments demonstrate, corollary to this theory, that the antagonists of the contracted muscles in convergent squint —which is essentially a spastic strabismus—as well as the little used abductors in divergent strabismus, are weakened. Adhering to the theory of Donders, I do not consider these muscular anomalies as being the *cause* of the strabismus, but as being the *consequence*.* This fact should not, therefore, prevent our deductions from having a positive effect upon the surgical treatment of strabismus. Rather are we constrained to direct our attention to *both eyes*, and not alone to that one which habitually deviates. It follows that we should choose, by their advancement, to strengthen the weaker muscles, instead of setting back or weakening the more powerful ones, thus reducing their action upon the globe when this is already none too great.

A study of the two methods of operating has shown me, moreover, another advantage that advancement possesses over muscular recession, viz., augmentation of the arc of excursion in the direction of the advanced muscle without limitation in the opposite sense; in other words, increase of posi-

*Comp. among others: Landolt, "L'étiologie du strabisme," Archives d'Ophtalmologie, 1887.

tive amplitude of convergence, without sensible diminution of divergence; consequently no risk of over-correction.

I have given elsewhere* the anatomical, physiological and pathological reasons that militate in favor of the advancement as against the setting back.

As far back as 1894, at the International Congress of Ophthalmology at Edinburgh, I advocated most positively muscular advancement to my colleagues there assembled.

Indeed, six years or more previously my statements were not based upon mere theoretic considerations, but upon irrefutable proofs, furnished by a long experience—upon the results of careful measurements as to the influence exerted by the two modes of strabotomy, not only upon the excursions of the eyes, but also upon the amplitude of convergence.

Often since and upon diverse occasions I have endeavored to set forth the advantages of muscle advancement, yet I have said but little concerning the surgical manipulation. This question had seemed to be, in a measure at least, of secondary importance. The object had been, first of all, to emphasize the necessity of abandoning the old method of strabotomy and of adopting the new, which is directly the opposite. The idea was that the discussion of a principle so important should not be trammelled, in the beginning, by minor considerations of method, or too fine distinctions of operative procedure.

It was my desire, moreover, to publish no method that had not been well tried. Thus even in 1881 and in 1894 I would not present my views to my confreres excepting they related to accomplished facts. Now I have evolved at last a method of muscular advancement which has, for a number of years, yielded such good results that I believe I may confidently recommend it. So far am I, however, from deeming it perfect that I would gladly be the first to seek a better still, and I would be pleased to profit by the advice of all those who will lend their co-operation in research along this line.

My method does not, in the main, differ much from that

*Archives d'Ophtalmologie, 1895 and 1897. French Cóngress of Surgery, 1898. Section of Ophthalmology at Heidelberg, 1899. "The Graduation of the Squint Operation," Archives of Oph., Vol. 26, No. 1, 1897. "Advances in the Surgical Treatment of Strabismus," Jour. of the A. M. A., November, 1899. Norris and Oliver, "System of Diseases of the Eye," Vol. IV., pp. 112-120, 1900.

which I described several years since. Meanwhile, however, I have made a few modifications, apparently slight, yet which really are of the greatest value.

Apropos, a few words as to the principal instruments that I use for the operation. First my blepharostat. That one whose spring rests upon the nose, to serve in advancement of the externus, and the one whose spring is placed at the temporal side, in advancement of the internus. In case of operation upon the superior or inferior rectus, either the one or the other may be chosen in accordance with the conformation of the patient's face. One peculiar advantage of this speculum is found in the fact that the bar which unites the hooks that hold the free border, lies on the outside of the lid. Attention is called also to the fastening, which is made, not by means of a screw, but by the aid of a simple lever, which the index of the same hand that places the speculum can fix or release, thus rendering its management simple and rapid.

A pair of ordinary fixation forceps without the catch.

A pair of my oblique-jawed forceps, especially useful in operations upon the ocular muscles.

A small tendon hook, somewhat flattened and with a bulbous extremity.

A needle holder with sliding catch, and curved needles, small and fine, and whose points must be absolutely faultless.

No. 1 braided silk, both white and black.

One pair of blunt scissors slightly curved on the flat, and another pair of the crow's beak pattern.

Narcosis may be dispensed with for muscle advancement except in cases of very young children and unmanageable persons. According to the statements of all upon whom I have operated, notably those of a physician among them, the operation is quite supportable with simple instillations of cocain. Subconjunctival injections of this anesthetic are not to be recommended, as their effect upon the tissues is bad.

Having placed the speculum (see Figure 1), I seize a fold of the conjunctiva near the corneal periphery, and with a single snip of the scissors cut the flap, as shown in the figure. Its summit coincides with the border of the cornea, its base is situated just behind the insertion of the muscle to be advanced. The top of the flap is then excised to avoid the un-

sightly bunch that the conjunctiva would form at the corneal limbus.

By means of the fixation forceps, held in the right hand, I rotate the globe in the direction opposite to the operated muscle, and with the other forceps in the left hand, grasp the tendon near its hither border in such a manner as to form a vertical fold and cut a buttonhole in Tenon's capsule just this side the tendon.

If this buttonhole be well made one sees at its bottom the white, bare sclera. It is only by this means that one may hope to get upon the hook, introduced at this opening, the entire tendon, neatly spread out, as is demanded in a proper advancement. We have long since abandoned the method of von Graefe whereby the tendon hook is placed point upwards beneath the conjunctiva, then turned, the point hugging the globe, pushing it forcibly through Tenon's capsule and thence beneath the tendon. By so doing the muscle is creased and twisted, and not infrequently the point penetrates between the fibres in such a way that what lies upon the hook is so confused that the sutures are wrongly placed, the tendon irregularly cut, and one even risks leaving some of the fibres undivided.

If we are not quite satisfied with the position of the hook, if it be feared, for example, that the buttonhole has not been made sufficiently to one side, we may cut another where the point of the hook emerges at the other side, here insert a second hook, pass it beneath the tendon and *beyond* the first buttonhole to reach any fibres that may have escaped the first hook, whereupon the latter is withdrawn.

The hook is now given to an assistant, who is to hold the tendon lightly without pulling upon the eye.

I next introduce the sutures, from without inwards, through cellular tissue, Tenon's capsule and tendon, one above, the other below, at about one-third the breadth of the tendon.

As to the distance the sutures are to be from the insertion of the tendon, all depends upon the effect one wishes to obtain. If a low degree, the sutures are inserted in front of the hook, not far from the insertion of the tendon, and the latter is then cut flush with the sclera. If, on the contrary,

greater effect is desired, the advancement is combined with a resection of the tendon. In this event the sutures are put in *behind* the hook (as in Figure 1) at a greater or lesser distance removed in proportion as the resection is to be much or little.

The threads placed, one blade of the crow's beak scissors is passed under the tendon, in front of the threads, and the tendon is divided straight across. Thus the hook is set free. Next, the stump of the tendon is carefully cut off where it enters the sclera.

Now the four ends of thread are picked up with the left hand and the muscle gently lifted to see that the sutures do not pierce too near the cut end of tendon, that no fibres remain attached to the globe, but that the whole may be easily brought forwards towards the border of the cornea. The points of a pair of closed scissors, which one manages with the right hand, like a muscle hook, are very useful during this maneuvre.

It only remains now to give to the tendon its new attachment. This part of the operation is one of the most delicate. If the muscle with its enveloping tissue—which must always be comprehended in the sutures—offers to the thread sufficient resistance to ensure a permanent hold, then the only danger of a giving-way of the threads is where they are anchored in the globe.

Hence, to make this as firm as possible, I seize the conjunctiva and subjacent episcleral tissue between the jaws of the forceps in the direction *a b* (Figure 1), and introduce the needle here as deep as may be—without, of course, going through the sclerotic—in the episcleral tissue. We cannot succeed in every case with the same facility. In children the conjunctiva is strong enough and the episcleral tissue soft enough to permit a very sharp needle to penetrate, without diffieulty, just as deep and as far as desired. In adults, on the other hand, the conjunctiva is much more friable and the scleral tissue harder. The former tears easily, the latter offers a resistance to the needle often embarrassing, for one does not dare push too forcibly for fear of penetrating the interior of the globe.

I avoid this complication in the following manner: If I

have the impression of not having gotten solidly into the episclera I pass the needle still further beneath the conjunctiva; and, if this does not inspire sufficient confidence, I conduct the needle, after having brought it out at the point *b*, in a direction perpendicular to *a b*, thus including a second fold of conjunctiva, and giving added strength to the anchorage.

The sutures being thus placed, I flood the muscle and the whole field of operation with tepid, sterile water. Next, the assistant seizes the globe with the fixation forceps, near the

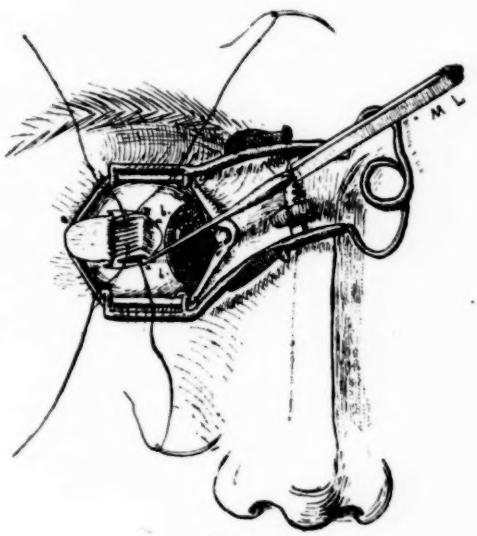


FIG. 1.

cornea, on the opposite side from the operated muscle, and rotates it towards the same, in order that the knots may be tied without causing undue traction either upon the muscle or upon the tissues embraced by the threads.

It is well to tie first a simple sustaining knot, by passing the thread twice around itself, both above and below. One returns then to the first knot, and draws it up a little more tightly before proceeding to complete the surgeon's knot. Likewise with the second. Lastly, the threads are cut off almost even with the knot to prevent their ends touching the cornea.

We use one white and one black thread the better to distinguish the one from the other.

The operation finished, we inundate the eye again with the sterilized water, and then apply a binocular, aseptic dressing. The dressing should be binocular even though but one eye is operated. Strabotomy upon one eye, does it not influence both eyes?* The free eye, by its movements, and through its accommodation, does it not affect equally its fellow, covered or not?

The occlusion of *both* eyes is calculated to produce that immobility required for healing by first intention, so indispensable in ocular surgery. When the peculiar kind of motility of the eye-ball is considered, turning, as it does, by the actions of muscles deeply situated within the orbit, around a common center, immobility cannot be secured mechanically by means of a compressive dressing. Such a dressing, so far from stopping motion, may even lead to disastrous consequences, especially after operations where the globe is opened. The only means we have of imparting quietude to the eyes—relatively, at least—is, by their simultaneous occlusion, to cut them off from every object of fixation and accommodation, and to keep the patient in general in calmness and at rest. These are conditions essential for obtaining good results. If we close but one eye: if, after the operation, we allow children to be brought in, or permit the patient to receive visitors at house or hospital, we jeopardize the success the operation, no matter how correctly executed.†

The patient should remain quietly in a well-ventilated room. A prudent companion or attendant may be present, and, if desired, there may be music or reading from an entertaining though not exciting book.

Our patients are visited by my assistant morning and evening, and by myself in the middle of the day. The dressings are changed, usually, every twenty-four hours, and the eyes freely bathed with warm sterilized 3 per cent. boric acid solution. In convergent strabismus at the same time a drop of atropin solution is put into each eye.

The sutures are removed on the fifth or sixth day. If it

*E. Landolt. International Congress of Medicine, Washington. "The Operation for Strabismus is Always a Binocular Operation."

†E. Landolt. Congress Internat. des sc. Med., Paris, 1900. Section d'Ophtalmologie, p. 289.

be a case of divergent strabismus the eyes are now left open, for the reason that the acts of convergence and accommodation both tend to produce the result sought by the operation. In convergent squint, however, I prefer to leave the dressing on a day or two longer, and, when they are left off, to replace them at once by convex lenses, which correct the total hyperopia as well as the astigmatism, if these exist. The glasses are medium smoked on account of the mydriasis.

The judicious employment of cycloplegics and spectacles, when directed by a trained observer, are invaluable adjuncts in the treatment of convergent strabismus. As long as there exists an inclination to excessive convergence, the suppression of the accommodation will prevent the patient from relapsing into the old infirmity. On the other hand, should we fear an over-correction—a very rare occurrence after advancement—the mydriatic is stopped, the convex glasses being retained; at least those correcting the hyperopia and the astigmatism.

If the tendency to divergence persists, it is only necessary to abandon the glasses entirely, when it is surprising how quickly the accommodation brings back the convergence.

The best guide for the normal direction of the eyes and the correction of the strabismus, our truest and most potent ally in every strabotomy, as we have always asserted, *is binocular single vision*. Hence, all our efforts should tend to restore, or establish, that important function on the part of our patients.

I have often spoken of the means we employ toward this end. To revert to them were repetition. It may be permissible, however, in closing this article, to call the attention of our readers to my latest stereoscope, wherein the illumination of one or the other of the images may be varied, thereby equalizing the impression received by the two eyes. It has proven very useful in re-establishing binocular vision.*

*E. Landolt. Congres Internat. d'Ophtalmologie, Utrecht, 1899, and Archives d'Ophtalmologie, 1899.

CORRESPONDENCE.

HELMHOLTZ AND OPHTHALMOSCOPY.

BALTIMORE, Jan. 22, 1902.

Editor AMERICAN JOURNAL OF OPHTHALMOLOGY.

Dear Sir:—Dr. S. M. Burnett's interesting paper, "Helmholtz and Ophthalmoscopy," published in the July, 1901, number of your journal, in which he takes exception to portions of my address upon "The Evolution of the Ophthalmoscope and What It Has Done for Medicine,"* has come to my notice only within the past few days; otherwise I should not feel warranted in asking you to give space to this very tardy rejoinder.

The burden of Dr. Burnett's complaint is that I have not done full justice to Helmholtz, and have failed to appreciate "his real position as the discoverer of ophthalmoscopy." That this was far from my intention must be apparent, it seems to me, to any impartial reader of my address, which abounds with much that is laudatory of the great physicist and his genius.

Dr. Burnett criticises, especially, two of my statements, which he quotes in full. The first is this: "As has often happened with important discoveries and inventions, Helmholtz's contrivance of an *Augenspiegel* with which to inspect the interior of the eye * * * seems to have been but the logical outcome of a series of interesting observations made by a number of investigators in the field of physiological optics. But, oddly enough, the problem which these investigators, with the exception of Cumming, were endeavoring to solve, and which Helmholtz himself had in mind, was not the discovery of a means by which the background of the eye could be inspected and pathological changes situated there recognized, but a solution of the question why, under usual

*New York Medical Journal, June 22, 1901, and Trans. of the Medical and Chirurgical Faculty of Maryland, 1901.

conditions, the pupil of the eye appears black and seems to emit no light, while, under certain unusual conditions, it does emit light and assumes a reddish appearance."

"It would be difficult to find," he says, "a more pronounced instance of complete misconception than is manifest in the foregoing paragraph, in so far as it refers to Helmholtz."

In justification of this rather uncompromising assertion, he declares that the investigators who preceded Helmholtz had gotten no further in the solution of the problem which he ultimately solved than to recognize "that the illumination of the pupil was due to the reflection of light from the bottom of the eye;" that Helmholtz, if he had chosen, might "have gone on and really made an ophthalmoscope to be called by his name," but that he did not do so (!); that "Babbage, Ruete, Rekoss, Jäger, Loring, Liebreich and numberless others" were only "instrument devisers;" that the apparatus of Cumming and Babbage "in so far as they represented a scientific instrument of precision" were nothing more than "the crude material of which they were composed;" that, on the other hand, "what Hemholtz was seeking for was the principle, the law by the application of which the fundus of an eye under illumination could be inspected by another eye;" and that his successful construction of an apparatus to carry out this law is an exact counterpart, as a feat of *a priori* reasoning, to the well-known discovery of the planet Neptune by Adams and Leverrier.

Now, let us see how all this tallies with the well-known facts, and in how far it justifies his criticism of the statements made in the paragraph quoted from my address. In the first place, and this is the gist of the whole matter: What are the facts in regard to Helmholtz's conception of the ophthalmoscope?

His biographer, Dr. John Gray M'Kendrick (and where could we find better authority?), in describing his "invention of the ophthalmoscope," makes this definite statement: "Had he [Helmholtz] done little else in his long lifetime his name would never be forgotten; and yet the invention of this instrument took its origin not in any profound investigation, but in the desire to exhibit a physiological phenomenon to his

students."* And in this same connection he quotes these words from an address by Helmholtz, himself: "This instrument [the ophthalmoscope] became the most popular of my scientific achievements; but I have already pointed [out] to the oculists how much good fortune, rather than any personal merit, favored me in the invention. I was endeavoring to explain to my pupils the emission of reflected light from the eye, a discovery made by Brücke. * * * I turned the problem over and over to ascertain the simplest way in which I could demonstrate the phenomenon to my students."† So, after all, the problem which Helmholtz had in mind, and the demonstration of which led to the invention of the ophthalmoscope, was the emission of reflected light from the eye, which is substantially what I stated.

Whether, in view of the statements, of Dr. M'Kendrick and of Helmholtz, just quoted, the comparison made by Dr. Burnett between Leverrier's location of the thitherto unknown planet Neptune and Helmholtz's "contrivance of an *Augenspiegel*," is an altogether happy one, I will leave to others to decide.

Let us next consider what warrant there is for Dr. Burnett's assertions (1) that the investigators who preceded Helmholtz had gotten no farther in the solution of the problem of successful ophthalmoscopy than to recognize that the illumination of the pupil obtained under certain conditions was due to the reflection of light from the bottom of the eye, and (2) that while Cumming, Babbage and the rest were mere "instrument devisers," Helmholtz sought and was the first to discover the underlying principle of ophthalmoscopy, "the law by the application of which the fundus of an eye under illumination could be inspected by another eye."

The first of these statements needs no refutation, since any one at all familiar with the investigations which led up to the invention of the ophthalmoscope cannot fail to see how entirely erroneous, how utterly indefensible it is. Indeed, it would seem that it could have been put forth only hurriedly and without reflection or by one who was entirely ignorant of

*Life of H. von Helmholtz, by Dr. J. G. M'Kendrick, p. 71, Longmans, Green & Co., 1899.

†Ibid, p. 73.

the work of Rudolphi, of Behr, of Cumming, of von Erlach, of Brücke and of Babbage—that is to say, ignorant of all that had been done between Prevost's observations, in 1810, and those of Helmholtz, in 1851.

It is a prerequisite to a consideration of the second statement that we should decide what the underlying principle of ophthalmoscopy is. To my mind, *the fundamental problem of ophthalmoscopy was the discovery of a means by which the interior of the eye to be observed could be illuminated and at the same time the eye of the observer be brought in line with the emergent rays from the observed eye, without interfering with its illumination.* The question of "how an image is formed by the light returning from the eye,"* the consideration of which led Helmholtz to employ the concave eye-lenses of his ophthalmoscope, and to maintain, erroneously, that with Babbage's ophthalmoscope a clear picture of the retina could not have been obtained because it was not supplied with such lenses, though important, is not, from my point of view, fundamental. If this view be correct, and I think it is not difficult to maintain, then Dr. Burnett's claim that Helmholtz discovered the *principle* of ophthalmoscopy, "the law by the application of which the fundus of an eye under illumination could be inspected by another eye," falls to the ground; for a recognition of the fundamental principle of ophthalmoscopy was involved in the experiments of Cumming, still more so in those of Brücke, especially in the experiment in which he obtained a bright reflex from an eye by looking into it through a tube passed through a candle flame; and, furthermore, the principle was not only recognized but was given a practical application in the ophthalmoscope of Babbage.

The other paragraph which Dr. Burnett quotes from my address, and to which he takes exceptions, is as follows: "And now, having reached its consideration in chronological order, let us turn our attention to the ophthalmoscope of Helmholtz. And what shall we say of it? That it was the legitimate parent of all later ophthalmoscopes; that it was the first instrument with which the back-ground of the living eye was seen distinctly; that Helmholtz was absolutely the first

*Op. cit., p. 73.

to suggest the indirect* method of ophthalmoscopy; that it was he who directed the world's attention to the subject, are facts which are not open to dispute. But, having willingly accorded him this large measure of credit, I believe I do his memory no injustice in asserting *that what was essential in his ophthalmoscope was not wholly original, and that what was original was not only distinctly not essential, but was the outcome of a misconception—a fortunate misconception, as it turned out—upon his part.*"

I have set forth fully in my address the grounds upon which these views are based, and I shall not tax your space by repeating them here.

Instead, I will close this rather prolix communication by simply asking Dr. Burnett this question: If it was not through a misconception—"because he reasoned that the eye under examination would focus for the image of the nearby flame reflected into it by the glass plates [of his ophthalmoscope], and hence that the light returning from its fundus would leave the cornea in converging rays, which must needs be rendered parallel or divergent in order to afford clear vision to the observing eye"†—that Helmholtz was led to employ *only concave* eye lenses in his ophthalmoscope, what was it that induced him to do so? For it must be borne in mind that it was not only the earlier model of his instrument of which this was true, but that even the later model, to which the Rekoss disks were attached, was furnished with concave lenses only—a series of eight lenses of from 13″ to 6″ focal length. Very truly yours,

SAMUEL THEOBALD.

PAMPHLETS RECEIVED.

"The Principles of Diagnosis of Lesions of the Spinal Cord," by J. Punton, M.D.

"Hay Fever and Asthma: A Permanent Cure by Means of Nasal Surgery," by F. S. Muckey, M.D.

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*Through a slip of the pen, doubtless, Dr. Burnett makes me say here "*direct*" instead of "*indirect*" method—a statement which I certainly would not have made.

†Extract from my address.

MEDICAL SOCIETIES.

PROVISIONAL PROGRAM OF THE SEVENTH ANNUAL MEETING OF THE WESTERN OPHTHALMOLOGIC AND OTO-LARYNGOLOGIC ASSOCIATION.

To be held at Chicago, Ill., on April 10, 11, and 12, 1902.

1. Address. Pres. C. R. Holmes, Cincinnati, O.

EAR.

ADDRESS ON OTOLOGY.

2. Relations of the Facial Nerve to the Tympanum, especially in Tympanic Exenteration. (Lantern Lecture.) B. Alex. Randall, Philadelphia, Pa. (By invitation.)

3. Symposium: Otorrhœa.

a. The Neighboring Parts to the Middle Ear and Their Infection. Otto J. Stein, Chicago, Ill.

b. The Diagnosis of Meningitis, Phlebitis and Cerebral Abscess following Suppuration of the Middle Ear. C. Barck, St. Louis, Mo.

c. What Eye Symptoms are of Value in the Localization of Brain Diseases? C. Barck, St. Louis, Mo.

d. When Should One Operate for the Cure of Chronic Suppurative Otitis Media? O. Joachim, New Orleans, La.

e. Principles of Treatment. Wm. L. Ballenger, Chicago, Ill.

4. A New Field-of-Hearing Chart. Derrick T. Vail, Cincinnati, O.

5. Pneumatic Massage in Aural Practice. Edwin Pynchon, Chicago, Ill.

6. Sources of Error in Functional Tests of the Ear. A. H. Andrews, Chicago, Ill.

7. Thiosinamine and Electrolysis in the Treatment of Tubal Obstruction. Jos. C. Beck, Chicago, Ill.

8. The Lymphatics of the Neck. J. Holinger, Chicago, Ill.

EYE.

Address on Ophthalmology.

9. The Use and Abuse of Spectacles. F. C. Hotz, Chicago, Ill. (By invitation.)

10. Genuine Sympathetic Ophthalmia with Complete Recovery of Both Eyes. Derrick T. Vail, Cincinnati, O.

11. Ex-Section of the Rectus for Paralytic Over-Correction on the Opposing Muscle. A. E. Prince, Springfield, O.

12. The Present State of Our Knowledge Concerning So-Called Partial or Graduated Tenotomies and the Hetrophorias. J. E. Colburn, Chicago, Ill.

13. The Economic Value of Sight. H. V. Würdeman, Milwaukee, Wis.

14. Dislocation of the Lens Into the Vitreous. G. F. Suker, Chicago, Ill.

15. (Subject to be announced) C. D. Wescott, Chicago, Ill.

16. Transient Astigmatism. O. A. Griffin, Ann Arbor, Mich.

17. Therapeutic Measures for Promoting Absorption of Exudates Within the Eye-ball. Randolph Brunson, Hot Springs, Ark.

18. Toxic Amblyopia. D. S. Reynolds, Louisville, Ky.

19. Pallor of Temporal Segment or Papillo-macular Bundle of Optic Nerve Fibres Due to Other Causes than Tobacco and Alcohol. J. O. Stillson, Indianapolis, Ind.

20. Ocular Affections Secondary to Syphilis. Randolph Brunson, Hot Springs, Ark.

21. (Subject to be announced.) J. G. Huizinga, Grand Rapids, Mich.

22. Epithelial Intra-ocular Tumors. A. Alt, St. Louis, Mo.

NOSE AND THROAT.

23. The Significance of Aphonia in the Diagnosis of Aneurism of the Arch. Wm. Porter, St. Louis, Mo.

24. The Best Means of Removing Turbinal Obstructions. J. W. Murphy, Cincinnati, O.

25. The Hypertrophied Faucial Tonsil: With a Report of the Morbid Histology of the So-Called Submerged Tonsil.

E. O. Sisson, Keokuk, Ia. Discussion: H. W. Loeb, St. Louis, Mo.

26. (Subject to be announced.) N. H. Pierce, Chicago, Ill.

27. Paralysis of the Vocal Cords in Acute and Contagious Diseases. T. V. Fitzpatrick, Cincinnati, O.

28. Hay Fever; Present Status, Pathology, Complications and Treatment. J. S. Mott, Kansas City, Mo.

29. Post Operative Management of Intra-nasal Surgery. M. A. Goldstein, St. Louis, Mo.

30. (Subject to be announced.) J. A. Stucky, Lexington, Ky.

31. (Subject to be announced.) C. R. Holmes, Cincinnati, O.

BRITISH MEDICAL ASSOCIATION—SECTION OF OPHTHALMOLOGY.*

The Varieties and Treatment of "After-Cataract."

By F. RICHARDSON CROSS, F.R.C.S.,

Surgeon, Bristol Eye Hospital; Consulting Ophthalmic Surgeon, Bristol Royal Infirmary.

After the extraction of a lenticular cataract there will always remain some fragments of altered lens or capsule as a record of the operation.

The pupil may be black and clear, and the sight, with the help of the correcting spectacles, practically perfect; or, on the other hand, the pupil may be occupied by a thick membrane which obstructs the sight to such an extent that the patient appears to have gained nothing by the removal of his lens.

The amount of the obstruction and the degree to which it interferes with the power of vision show wide varieties in different cases. Such opacities, films, membranes, and other complications as result from the removal of the lens, are best designated by the name "*Nachstaar*," or "after-cataract."

*British Medical Journal.

The lens is developed from the invagination of the ectoderm, which constitutes the closed embryonic lens sac.

The epithelial cells which line the sac posteriorly rapidly enlarge and develop to form the lens fibres, which grow forward into the cavity of the sac until they practically fill it up and spread out in layers behind the anterior wall.

The anterior layer of the primary lens sac takes little or no part in the production of the lens fibres; it persists throughout life as a continuous row of polygonal cells, which is known as the subcapsular epithelium.

The subcapsular epithelial layer and the transitional cells near the equator of the lens have, no doubt, an important part in the development and organization of the films and opacities which constitute after-cataract.

After-cataracts present many varieties. They may be characterized as "simple" if only the lens *debris* and the capsule are implicated. They may be "complicated" by entanglement with some of the important structures around—the cornea, the iris, the ciliary body, or the vitreous. More serious cases, where inflammation has followed the cataract extraction, and where the capsular membrane, thickened by the deposit of lymph or morbid products, is adherent to the adjoining structures, have been well classed by Mr. Jessop under the heading "inflammatory."

Whatever be the nature or variety of an after-cataract, we may assume that it results from imperfection of some sort or other in the technique of the operation, or from a faulty healing; and the question arises, can any special precaution at the time of the extraction of the lens avoid after-effects which continue to obscure the sight?

A peripheral incision of the cornea or a conjunctival flap encourages a rapid healing, and lessens the likelihood of false adhesion between the cornea and the capsule. Bruising of the corneal flap should be carefully avoided to encourage primary union. The method of lacerating the capsule at an extraction for cataract is likely to influence the after-results: a free tearing is advisable in order to leave a large opening afterwards, but care must be taken not to dislocate the lens nor to damage the hyaloid.

Where a distinct capsular membrane exists as an accom-

paniment of lenticular cataract, it should be certainly removed with the latter. The lens may be extracted in its capsule entire, or the anterior surface of the latter may be included in a circular cut by the cystitome and then extracted by capsule forceps.

In addition to a well-planned corneal incision, and thoughtful dealing with the capsule, the cortical *débris* must be as thoroughly as possible extruded from the eye. Emptying and cleansing of the lens cavity can be made very thorough where an iridectomy is done, but in simple extraction I am strongly of opinion that it is more essential to have a perfect replacement of the iris and pupil than a thorough removal of the cortical *débris*. In simple extraction I do all I can to ensure the escape of cortex and soft lens tissue with or directly following upon the delivery of the lens; if, then, other fragments are seen to be left, they are also extruded, but scarcely any further toilette is practiced for fear of causing paralysis of the pupil. The iris and the pupil are replaced as rapidly as possible.

A pupil apparently clear may be occupied by a very fine, scarcely-recognizable, transparent capsule, perhaps wrinkled, quite free of the iris, and passing down behind it towards the hyaloid, but often thicker in the coloboma, and more or less attached to the extraction wound in the cornea; or the capsule may be studded with distinct opacities of altered lens substance, or it may appear as a definite membrane. Should inflammation occur it obviously complicates the case by iritic synechiæ and other adhesions or thickening of the structures involved, or by healing together of the coloboma.

There is great diversity of opinion as to the risks of interference with opaque capsule after cataract extraction. Some look upon it as a very dangerous procedure; others do the operation in a large percentage of their cases and without much hesitation. Some resort to it only in order to restore sight to an eye that is practically valueless for purposes of vision, others when sight, though good, seems capable of being made still more perfect. It is important to know what was done in the earlier operation and how the eye healed after it. When inflammation, particularly septic inflammation, has occurred, interference should be resorted to only if necessary, and then with the greatest precaution.

Though there may be no special anxiety about an operation for after-cataract, it should be always undertaken with due precautions. The patient's health should have been attended to; the eye and all instruments used should be thoroughly cleaned and aseptic.

Careful examination of the membrane and its attachments should be made under magnification, and with concentrated light, with the pupil fully dilated, and these aids should also be taken advantage of during the operation itself.

I do not consider any early secondary operation advisable; it is quite uncertain how much *débris* may become absorbed, or to what extent the sight may improve. A very large amount of *débris* may be present after the extraction, particularly if the lens has been immature, or in the case of a young patient; but it is exactly under these latter conditions that natural absorption is most marked; we cannot tell early what change may occur, nor judge where the membrane is absent or thin to guide us in enlarging the opening.

The eye should have thoroughly recovered from the earlier operation before being subjected to another. I rarely operate at a less interval than three months between them.

It is absolutely essential that thorough recovery should have taken place, and that the eye should be quiet after an extraction which has been complicated by iritis or any inflammation. The irritability of the eye is easily re-established, and the *materies morbi* readily made active. If the operation is done too early under these conditions, not only does the opening in the opaque membrane refill and give no good result, but intractable inflammation, destructive cyclitis, or even panophthalmitis may result.

If the primary inflammation has been of a serious character, particularly if the ciliary body has been implicated, a year is not too long a time to wait before a further effort is made to restore the sight; indeed, if the patient has moderately useful vision, and there is an absence of complications that are likely to make matters worse, the eye had better be left alone. Each case must be taken on its merits.

The object of the operation in an after-cataract is to produce a clear aperture for vision, but it should also aim at a correction of anatomical defects and of conditions likely to

lead to malnutrition of the organ—such as synechiæ, constricting bands, or a tendency to glaucoma. On the other hand, it should avoid unnecessary damage of the surrounding structures. Interference should be effectual, but it should be limited in range; it should be delicately but rapidly executed. The thinnest part of the capsule near the pupil is the best point to select for making an opening. Synechiæ of the iris should be divided.

Where it is likely to suffice, a modified Bowman needle is the best instrument to use. It must be made with a long cutting edge, and be used as a knife. Should the capsule not readily divide, but shift with the needle, at once introduce another one on Bowman's method, taking care that both needles penetrate the same opening in the membrane, so as to tear a single hole, and not leave a small band which divides the hole in two.

Lougnon (Moulins), to ensure a single opening, first passes a needle grooved on the side, along which he runs a second cutting needle.

When the membrane is quite thick or much implicated with the original pupil (which is often in its normal position), a somewhat stronger knife is preferable to the knife needle.

A tearing needle can be used in connection with the knife to fix some part of the pupil while the other cuts it. Cutting, not tearing, should always and under all conditions be employed to effect the opening in the capsule. Some operators use a sharp hook in the membrane to make a *point d'appui* against which the knife can cut. Others use a blunt one for the purpose of tearing open the aperture made by a knife, or even for the purpose of withdrawing the edge of the aperture with the adjoining capsule, so as to cut it off with the scissors.

Stilling tears the capsule by means of two sharp harpoon-headed needles. They are introduced in the limbus corneæ on opposite sides.

When the secondary membrane is so thick or complicated that cutting with the knife, or knife and needle, is likely to be ineffectual, capsular or iridotomy scissors must be used. Panas's forceps are passed sideways, one blade in front of the capsule and one behind it, the sac firmly grasped between

them, and by small slow movements it is gradually withdrawn entire. If adhesions are present they must be specially dealt with, and the proceeding can be modified in details. If successful the operation is complete and final. The reaction is said to be insignificant, and the patient soon well.

There can be no doubt as to the great value of iridotomy with scissors where the capsule is firmly fixed, or where the iris fibres are stretched over the aqueous chamber by adhesion of the iritic pillars or of the pupillary region to the corneal wound. Where a thick capsule lies more or less free, it will be merely dislodged by efforts at discission, but it may be successfully bisected by the scissors.

Such cases of thick movable capsule as result after discission of ill-developed eyes with congenital cataract or in partial absorption after secondary cataract where the lens nucleus and fluid remain in the capsule sac are best dealt with by extraction forceps, which draw out the sac or membrane entire. The ideal extraction of a cataract is that of the whole lenticular body in its capsule. But this is only safe under exceptional circumstances. The total extraction of a secondary cataract or after-cataract, which consists mainly of hardened capsule, is also ideal; but it is not devoid of danger. Extraction of the capsule by forceps should be our last resource, but in some cases it is the only one that gives hope of sight.

The PRESIDENT thought that Mr. Richardson Cross had most admirably summed up the conditions which existed in cases of after-cataract. For dividing a thickened capsule, however, he far preferred an old Graefe's knife, which had been ground down very thin, to an ordinary discission needle. He also thought that a simple extraction without iridectomy was far less likely to be followed by secondary cataract than when an iridectomy had been performed.

DR. DARIER (Paris) thought that much unnecessary damage was done to the eye by going deeply into the vitreous when needling. He thought that care should be exercised not to do more than just divide the capsule. He described a curved needle he now used. If too thick to use this he advised the division of the capsule with scissors or its complete extraction.

MR. POWER said that in the course of a long experience he

had tried most of the methods mentioned by Mr. Cross, and although in many cases each of these gave excellent results, yet sometimes they ended in disastrous failures. He thought there were individual differences in the toughness of the capsule which might be national. Thin capsules might easily be torn by any procedure, but when tough they were difficult to manage. He was of opinion that at least a year should elapse before any secondary operation should be undertaken and then only with hesitation and doubt, and he thought that in most cases if the vision were moderately good the patient should be contented.

Mr. Devereux Marshall was convinced of the danger of needling, and avoided it whenever he could. He was, however, fully persuaded that the earlier a needling were done, if it had to be done, the better on account of the capsule being then thinner and more elastic than later on, when it became tough, and refused to retract when divided. It was usually in these late needlings that disaster occurred. He agreed with Dr. Darier as to the advisability of not passing the needle deeper into the vitreous than was absolutely necessary; the less damage done in this way the better.

Mr. Tatham Thompson had originally been a great advocate of the double-needle discission, but had lately come to prefer a ground-down Graefe's knife. He did not think that puncturing the vitreous added materially to the risk, but he thought that a too superficial puncture of the capsule was the greater danger, as it led to greater dragging on adhesions. He avoided as far as possible the introduction of forceps.

Mr. E. Dykes Bower said that the remarks which had fallen from the President, Mr. Power, and Mr. Devereux Marshall represented entirely his own feelings, which were those of intense anxiety when approaching an operation for secondary cataract, more so than when performing an extraction; and a question which arose was whether the bad results which occasionally followed were really due to sepsis. The instruments were easy to sterilize, the cornea was avascular and the traumatism was not great; although the conjunctiva could not be rendered absolutely aseptic, yet this hardly seemed sufficient cause for suppuration. He thought the general health was responsible for a good deal. He always

felt particularly anxious as to dealing with the capsule in cases of needling in high myopia, and he would like to know if other members had a similar dread of this particular class of case.

Mr. A. Hugh Thompson asked Mr. Cross whether he introduced the needle inside the corneal margin or through the conjunctiva. He had learnt to adopt the latter place from Mr. Lang with the object of avoiding an escape of aqueous and diminishing the risk of sepsis.

Mr. Roll said he had found a ground-down Graefe knife very useful in a recent case where there was increased tension. He divided the membrane freely, and this had the effect of giving good vision and curing the glaucomatous symptoms. He also thought that if the anterior capsule were removed with forceps, far fewer secondary operations would be required.

Mr. L. V. Cargill described a method he had adopted for dividing the capsule. Two bent broad needles were passed, one above through the cornea and pupillary membrane, and the other below through the cornea and iris. A Tyrrell's hook was then passed through the lower incision in cornea and iris, threaded up behind through the upper incision in the membrane, the hook was turned forwards, and the intervening capsule was drawn downwards, and cut off short at the lower incision with iris scissors.

Mr. Hartridge showed his capsulotomy needle.

Mr. Richardson Cross, in reply, said that in simple extraction he thought it far more important to thoroughly replace the iris than to so thoroughly remove the soft matter. He also was of opinion that if no iridectomy were done the liability to glaucoma was far less, and in fact he had never seen a case. He did not think that all the cases which did badly were due to sepsis, and he always entered the needle at the periphery in the conjunctiva near the cornea. He thought that all cases should be treated on their own merits, and no fixed rule could be given as to what vision justified interference after a cataract had been extracted. He had no unusual dread in dividing a capsule after the removal of a lens in cases of high myopia, and in fact he had never seen complications arise in this particular class of case.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. SHOEMAKER, M.D.
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PRIMARY GANGRENE OF THE EYE-LIDS.

Roger and Weil, (*La Presse Medicale*, Sept. 26, 1901), report a case of primary gangrene of the eye-lids, in a man aged 33. Œdema suddenly developed at the internal canthus, which rapidly spread to the upper and lower lids and surrounding tissues, producing an erysipelatous condition, upon which appeared spots of gangrene; there were no phlyctenules and no enlargement of the neighboring glands. The constitutional symptoms were fever and albuminuria.

The lids were punctured, and cultures made from the fluid obtained. These showed an aërobic micrococcus, pathogenic for rabbits and guinea pigs, but not for rats or mice. Under treatment the condition gradually improved. Primary gangrene of the eye-lids is very rare; this seems to be the first case that has been reported. Like gangrene of the breast, gums and male genitalia, in which aërobic micro-organisms have been found, this condition is curable.

CATARACT OPERATIONS IN THE AGED.

E. Mendel, (*Berliner Klinische Wochenschrift*), thinks advanced age does not offer an unfavorable prognosis for cataract extraction. Delirium occasionally occurs, but the most serious complications are those related to the heart, lung, and bladder. His observations embrace 1,645 cases of nuclear cataract among which there were 36 cases over 80 years of age. The results were unsatisfactory in only 2 of the 36.

ON THE DESIRABILITY OF FURTHER DATA CONCERNING THE PREVENTION OF OPHTHALMIA NEONATORUM.

Lucien Howe, (*Phila. Medical Journal*, Jan. 18), refers to the data collected by Kostling, (*Arch. für Gynaekologie*, 1896), who, in summing up the combined experience of obstetricians in over 17,000 births, in which no prophylatic treatment was

used, found that ophthalmia developed in over 9 per cent.; in over 24,000 births treated by the Credé method about one-half of 1 per cent. developed the disease. Such results clearly indicate the duty of the obstetrician. The author thinks a law should be passed compelling every practitioner who attends a case of confinement in an institution supported in part, or wholly, by public funds, to make use of the Credé method, or some other method which has, in a large number of cases, been found equally efficient—a suggestion we most heartily endorse. The objection to 2 per cent. solution of nitrate of silver is, that it is always painful and frequently causes a catarrhal conjunctivitis.

The ideal remedy is one that is efficacious, causes no pain and no catarrhal conjunctivitis. In the *Centralblatt für Gynäkol.*, Aug. 3, 1901, Piotrowski gives a record of 1030 children treated with a strong solution of boric acid and a 10 per cent. solution of protargol. Not a single case developed ophthalmia, and a slight catarrhal conjunctivitis was produced in only 1.2 per cent.

If other observers can get equally good results from this treatment, it is certainly superior to the method of Credé. The author urges the necessity of more such data, especially as to the value of protargol, and for this, he very properly says, we must look to obstetricians.

FROST BITE OF THE CORNEA.

E. L. Meierhof, (*New York Medical Journal*, Nov. 30, 1901), reports two cases of clouding of the cornea in infants less than two months old, due, he thinks, to the excessive application of cold in catarrhal conjunctivitis. Ice cold pledgits had been applied to combat hemorrhagic ophthalmia. The cloudiness soon disappeared when warm applications were substituted. The author urges the necessity of being very careful about the application of cold, especially when there is no swelling of the lids.

IDIOPATHIC DETACHMENT OF THE RETINA.

Sinclair, (*Journal of Pathology*, June, 1901), has studied, by experiment, the etiology of detachment of the retina. He believes that the theory of Nordenson, that the detachment is

caused by the traction of adhesions between vitreous and retina, is, in some cases, the correct explanation, but does not think it applicable in the majority of instances. He thinks the theory of diffusion is the correct one in most cases. He produced detachment in rabbits' eyes by the post retinal injection of salt solution, and also of blood plasma; after the injection of the latter the detachment progressed, owing to the continued accumulation of fluid diffused from the vitreous. The vitreous fluid is composed mostly of water (98 per cent.), while the post retinal exudate, in inflammatory conditions, is a highly albuminous fluid. Looking upon the retina as a dialysing membrane, an accumulation of inflammatory exudation, behind the detachment, will tend to increase by the process of diffusion of the vitreous fluid through the retina; this is the only way we can account for those cases where there is a rapid extension of the detachment without increase of intraocular tension. The fact that changes in the vitreous often take place in eyes, in which retinal detachment subsequently occurs, cannot be taken as proof that they cause the detachment. The truth seems to be that both conditions are brought about by uveal inflammation, and are, therefore, frequently found together.

THE INFLUENCE OF THE CONDITION OF THE APPARATUS OF ACCOMODATION OF THE EYE, ON THE DEGREE OF CURVATURE OF THE CORNEA.

V. A. Dobraslavin, (*Vratch*, Nov. 3, 1901), found by experiments on animals that the cornea changes the radius of its curvature under the influence of spasm or paralysis of accommodation, caused by the use of eserine or atropine. He believes such changes also occur under normal conditions of accommodation.

PAMPHLETS RECEIVED.

"Forty-eighth Annual Report of the Girls' Industrial Home and School, St. Louis, Mo."

"Methyl (Wood) Alcohol as a Cause of Blindness. Should it be Placed on the List of Poisons?" by S. M. Burnett, M.D.

BOOK REVIEWS.

A Manual of Ophthalmoscopy for Students and General Practitioners. By J. E. Jennings, M.D. With ninety-five illustrations and one colored plate. *P. Blakiston's Son & Co.*, Philadelphia. 1902.

This is a very handy and practical text-book which will prove of great value to students and general practitioners who, at a moderate cost, want to be supplied with a safe guide into the mysteries of ophthalmology without buying a larger and expensive treatise on ophthalmology. The illustrations, a number of which are original, are to the point and aid the reader to more fully comprehend the text.

The Practical Medicine Series of Year Books. Edited by G. P. Head, M.D. Vol. III.: Eye, Ear, Nose and Throat. By C. D. Wood, M.D., A. H. Andrews, M.D., and T. M. Hardie, M.D. *The Year Book Publishers*, Chicago, Ill. December, 1901.

This book attempts to give the reader a review of the most important work in its different departments. The chapter on the eye is by C. A. Wood, well written and full of information, while in the nature of things not a complete review by far. It was the intent, as stated by the author, to give prominence to such works as would benefit the general practitioner.

Spring Catarrh of the Eyes. By H. Danvers, M.D. With three plates. London: *John Bale, Sons & Danielsson.* 1901.

This little monograph gives a very complete general résumé of what is known of spring catarrh, to which are added the description and anatomical examination of three new cases. This is followed by hints as regards the therapeutics, in which ice-cold packs are especially recommended. It should be read and appreciated. Alt.